to the hospital, but on arriving there he became acutely ill. The left leg became stiff, then jerked up in a flexion posture on the abdomen and gave severe pain in the hip joint. Doctors made a spinal puncture, but found nothing of help in diagnosis. Death within forty-eight hours was predicted. The abdomen bloated badly.

He remained in the hospital ten weeks, gradually becoming able to walk a little, when he had another attack of severe pain in the left leg. It was a little over a year after this episode that he first came under the observation of the writers.

A neurological examination gave the following information: There was slight diplopia on looking at distant objects. A vertical nystagmus in all positions and a rotary nystagmus on looking up were present. The left frontalis was drawn up continuously. The speech was jerky, ataxic, explosive. A clumsy ataxia of the neck muscles kept the head moving unless it was supported. A coarse tremor of the hands and hypermetria of the right hand were present. Adiadokokinesis was marked. The epigastric reflexes were not obtained. Hypermetria of the feet was present, and in harmony with this a reeling ataxic gait with so little effectual balance that falls occurred frequently unless another supported the patient. During locomotion or sitting without support to the trunk, a clumsy, slow titubation of the trunk muscles occurred. Spinal fluid was entirely negative.

This patient a year later received a very mild electric shock to the muscles of the lower extremities. The left leg was jerked up, and because of the total absence of synergy between the protagonists and antagonists the femur was fractured. In spite of all this he believed he was improving.

The diagnosis in this case was difficult, mostly because of the bizarre history. The actual relation between trauma and the onset of these conditions is not easy to evaluate. We are inclined to believe that there was no relation between the two since the patient felt well and worked for three weeks after the accident before he became ill. Such spasms of the limbs as occurred are not unknown, but are uncommon.

The pathology is that of an olive-ponto-cerebellar atrophy. Yet even here the circumscription is not absolute.

SUMMARY

The writers note a few points demonstrated by these cases which are valuable diagnostically.

1. Although optic atrophy may not have progressed to the stage of being visible in the eye grounds, a field of vision carefully plotted will often show a marked concentric contraction. This should militate against a diagnosis of multiple sclerosis.

2. The cerebrospinal fluid is usually negative in these cases. When it is abnormal, the only abnormality found is generally that of a colloidal gold curve.

3. These patients suffer a slowly but steadily progressive ailment which should aid in ruling out multiple sclerosis. But as a class they are optimistic and claim improvement when it does not occur, and hence mislead the physician.

4. The age of onset as given by the patient is usually actually much earlier than stated. Unless the history is taken from relatives or close friends, a wrong conception is often obtained because the onset is so insidious.

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THE LURE OF MEDICAL HISTORY

GALEN: GREEK, MEDIEVALIST AND MODERN*

PART II

By SANFORD V. LARKEY, M. D.
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SOME of Galen's most striking experiments on the nervous system are concerned with the production of the voice and respiration. In describing the anatomy of the recurrent laryngeal nerve, he compares its action to that of the glossokomion, a device for reducing fractures. In this, pull is exerted in opposite directions by having one set of ropes run around a pulley. He says: "This double course nature thought of before man . . . for the nerve descending across the neck to a part of the thorax, . . . mounts again from there to the larynx, where the nerves insert themselves into the muscles in question. Each of these six muscles is drawn down as if by hand." He very dramatically demonstrated its action in a living animal by cutting the nerve while the pig was squealing. The animal instantly stopped squealing. Galen often gave his demonstrations before large crowds and had a fondness for the theatrical.

His work on section of the spinal cord was fundamental. He says: "If one cuts one of the lateral halves (of the cord) obliquely or transversely, sensation and movement are destroyed on the same side and below the section, the animal is half motionless. He is completely motionless when the division of the cord is complete. . . . If one cuts the cord between the first and second vertebrae the animal perishes immediately. Between the third and fourth, respiration is abolished and the entire trunk and limbs are motionless and insensible. . . . Between the seventh and eighth . . . the animal breathes then only with the diaphragm, as it does when it has no need of great respiratory effort; for if it has run, if it is agitated by fever, or overcome by heat, the diaphragm is powerfully aided by the six superior muscles, by the intercostals, and by those of the abdomen. . . . If, then, one cuts the trunk of the phrenic nerve, or each of its roots one after the other, the superior muscles come into violent action, and accomplish themselves the act of respiration." He then shows the results when the nerves to the other accessory muscles are cut.

His experiments on the action of the kidneys and ureters also show careful operative technique and accurate observation.

"The fact is that those who are enslaved to their sects are not merely devoid of all sound knowledge, but they will not even stop to learn! Instead of listening, as they ought, to the reason why liquid can enter the bladder through the ureters, but is unable

* From the department of medical history and bibliography, University of California Medical School.

* Read before the Alameda County Medical Society, February 16, 1931.

* For Part I, see April 1931 issue of California and Western Medicine, page 271.

Fig. 4.—Galen demonstrating the function of the recurrent laryngeal nerve.

to go back again the same way—instead of admiring Nature's artistic skill—they refuse to learn; they even go so far as to scoff, and maintain that the kidneys, as well as many other things, have been made by Nature *for no purpose!*

* * *

"Now the method of demonstration is as follows: One has to divide the peritoneum in front of the ureters, then secure these with ligatures, and next, having bandaged up the animal, let him go (for he will not continue to urinate). After this one loosens the external bandages and shows the bladder empty and the ureters quite full and distended—in fact almost on the point of rupturing; on removing the ligature from them, one then plainly sees the bladder becoming filled with urine.

"When this has been made quite clear, then, before the animal urinates, one has to tie a ligature round his penis and to squeeze the bladder all over; still nothing goes back through the ureters to the kidneys. Here, then, it becomes obvious that not only in a dead animal, but in one which is still living, the ureters are prevented from receiving back the urine from the bladder. These observations having been made, one now loosens the ligature from the animal's penis and allows him to urinate, then again ligatures one of the ureters and leaves the other to discharge into the bladder. Allowing, then, some time to elapse, one now demonstrates that the ureter which was ligatured is obviously full and distended on the side next to the kidneys, while the other one—that from which the ligature had been taken—is itself flaccid, but has filled the bladder with urine. Then, again, one must divide the full ureter, and demonstrate how the urine spurts out of it, like blood in the operation of venesection; and after this one cuts through the other also, and both being thus divided, one bandages up the animal externally. Then when enough time seems to have elapsed, one takes off the bandages; the bladder will now be found empty, and the whole region between the intestines and the peritoneum full of urine, as if the animal were suffering from dropsy. Now, if anyone will but test this for himself on an animal, I think he will strongly condemn the rashness of Asclepiades, and if he also learns the reason why nothing regurgitates from the bladder into the ureters, I think he will be persuaded by this also of the forethought and art shown by Nature in relation to animals." [2]

While Galen's therapeutics is chiefly famous for its polypharmacy, his name still surviving in our "Galenicals," he was a really great physician. A true follower of Hippocrates, he considered the patient as an individual, basing his treatment on careful diagnosis. He relied greatly on the healing power of nature, and placed stress on hygiene, rest, diet, and exercise. The following description of cases, while differing from the simple, concise histories of Hippocrates, will show something of his method. They also give many insights of his character, his conceit and contentious nature.

"I was called in to see a woman who was stated to be sleepless at night and to lie tossing about from one position into another. Finding she had no fever, I made a detailed inquiry into everything that had happened to her, especially considering such factors as we know to cause insomnia. But she either answered little or nothing at all, as if to show that it was useless to question her. Finally, she turned away, hiding herself completely by throwing the bedclothes over her whole body, and laying her head on another small pillow as if desiring sleep.

Fig. 5.—Galen and the woman who was in love with Pylades.

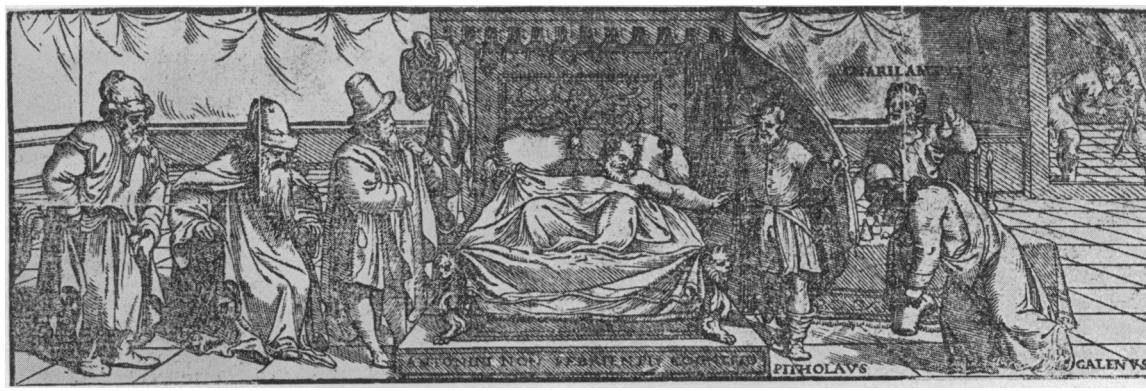

Fig. 6.—Galen is called to treat the Emperor, Marcus Aurelius.

"After I had diagnosed that there was no bodily trouble, and that the woman was suffering from some mental uneasiness, it happened that, at the very time I was examining her, this was confirmed. Somebody came from the theater and said he had seen Pylades dancing. Then both her expression and the colour of her face changed. Seeing this, I applied my hand to her wrist, and noticed that her pulse had suddenly become extremely irregular. This kind of pulse indicates that the mind is disturbed; thus it occurs also in people who are disputing over any subject. So on the next day I said to one of my followers, that, when I paid my visit to the woman, he was to come a little later and announce to me, 'Morphus is dancing to-day.' When he said this, I found that the pulse was unaffected. Similarly also on the next day, when I had an announcement made about the third member of the troupe, the pulse remained unchanged as before. On the fourth evening I kept very careful watch when it was announced that Pylades was dancing, and I noticed that the pulse was very much disturbed. Thus I found out that the woman was in love with Pylades, and by careful watch on the succeeding days my discovery was confirmed."

* * *

"What happened in the case of the Emperor himself was really wonderful. His own opinion and that of the physicians of his entourage who had gone abroad with him was that some febrile paroxysm had begun. But they all proved wrong both on the second and third day, in the morning and at the third hour. He had on the preceding day taken a draught of bitter aloes at the first hour, and then some theriac as was his daily custom. Next he took some food about the sixth hour, washed at sunset, and had a small meal. During the whole night there ensued colicky pains with intestinal evacuations. This made him feverish, and when his attendant physicians observed this, they gave orders that he should be kept quiet; then they prescribed slop diet at the ninth hour. After this I was myself also summoned to come and sleep in the Palace. Then, when the lamps were newly lit, a messenger came to call me at the Emperor's bidding. Three doctors had been observing him since about daybreak, and two of them feeling his pulse, and they all considered this the beginning of a febrile attack. I stood by, however, without saying anything; so the Emperor, looking at me first, asked why, when the others felt his pulse, I alone did not do so. I said to him, 'Two of these gentlemen have already done this, and probably when they were abroad with you they already learned by experience the characteristics of your pulse; hence I expect they will be better able to judge its present condition.' On my saying this he bade me also feel his pulse. It seemed to me that, taking his age and constitution into account, the pulse was far from indicating the beginning of a febrile attack. I declared that this was no onset of fever, but that his stomach was overloaded by the food he had taken, which had turned to phlegm prior to ejection.

"My diagnosis seemed praiseworthy to the Emperor, and he repeated three times in succession: 'That's it. It is just what you say. I feel I have taken too much cold food.' And he asked what was to be done. I answered what I knew, and said to him: 'If it were anyone else who was in this state, I should follow my custom and give him wine sprinkled with pepper. But in the case of kings like yourself, physicians are in the habit of giving safer remedies; hence it will be enough to apply over your stomach some wool impregnated with warm spikenard ointment.' The Emperor said that in any case when his stomach was out of order he was in the habit of applying warm spikenard ointment enveloped in purple wool. So he gave orders to Pitholaus to do this, and to let me go. When this application had been made, and his feet thoroughly heated by rubbing with the warm hand, he asked for some Sabine wine, sprinkled pepper in it, and drank. He then declared to Pitholaus that he had 'one physician, and he was a perfect gentleman.' Further, as you know, he keeps constantly saying about me that I am 'first among the physicians and alone among the philosophers.' For he had already had experience of many who were not only mercenary, but also quarrelsome, conceited, selfish, and malicious. . . . "

* * *

"Thus another case was that of an individual who stated that he was suffering extreme pain in his knee. He was one of those slaves who run alongside their masters in the streets. I observed that there was some pretence in this pain, my suspicions being aroused partly by the fact that the master was leaving town that day, and partly also by the young man's character, as he was just the sort of man to tell lies of this kind. I therefore asked one of his fellow-slaves who knew him well whether the young fellow was in love with any young woman, on whose account he was likely to wish to remain at home when his master was starting for a somewhat long journey. And it was so.

"Such matters, then, are resolved by external considerations. On the knee itself, however, was an extensive swelling, which might have alarmed a layman, but which to the expert in these matters had obviously been produced by *thapsia* (a substance like mustard). Such a conclusion is the result of medical experience, and not one of those arrived at by external considerations. Also belonging to medical experience was the recognition that nothing had lately happened to him which could have suddenly brought about such a swelling. He had not been running overmuch, he had not been struck by anybody, he had not hurt himself by leaping or jumping over ditches. . . . Further, when I asked him what the pain was like, he did not give quick, ready, or consistent answers. Hence, when his master had left, I

applied a drug which, while possessing no anodyne quality, was adapted by virtue of its chilling action for removing the condition produced by thapsia. After one hour I had him confessing that he had absolutely no pain, whereas, if the pain had actually come from inflammation, it would not merely not have been checked but actually made more severe by a cooling application."[1]

In all of his writings Galen appears as a very real person and seems much closer to us than Hippocrates. While we may not always agree with him, we cannot help liking him. In closing I will quote Charles Daremberg: "To appreciate the achievements of Galen, we must realize that it was practically impossible to go much further in science in the age in which he lived."

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CLINICAL NOTES AND CASE REPORTS

STOMATITIS APHTHOSA WITH SYSTEMIC COMPLICATIONS

REPORT OF CASE

By SOPHIE A. LURIE, M. D.
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THE etiology and pathogenesis of stomatitis aphthosa are still obscure.

REVIEW OF LITERATURE

O. Ganss[1] described the observations of his experimental works on guinea pigs, and came to the conclusion that stomatitis aphthosa is possibly due to a mixed infection.

B. Peiser[2] compared his own experiments on rats with those of Ganss' and obtained similar results without any definite conclusions.

Phillip Varney[3] quotes Keilty (1922), who on examining the gums of two hundred patients, found fusiform bacilli and spirochetes in almost every case. McKinstry (1917) found organisms similar to fusiform bacilli and spirochetes in the mouths of 95 out of 230 healthy recruits during the war. Brams and Pilot (1923), Tunniclift (1923), and others have observed them in the normal tonsils.

A wavy type of fusiform bacillus has been isolated in which may be found spiral-like forms, so closely resembling true spirilla at certain stages of their growth, as to lead to confusing these spiral forms, which are *nonmotile and are present only for a short period of time,* with true spirilla to which they have no relationship.

J. Gerstenberger[4] states that the administration of water soluble vitamin B produces in herpetic stomatitis, aphthous stomatitis, herpes labialis, acute gingivitis, and ulcerative stomatitis a remarkably rapid improvement and recovery. Thirteen children and one adult in whom these conditions appeared either singly or in combination were well nourished and partook liberally of food until the stomatitis appeared. It is suggested that the primary etiologic factor in these cases is metabolic and nutritional and that any rôle that bacteria or similar agents may play is secondary.

J. W. Auld[5] states that the latent pathogenic bacteria which are usually present in the mouth and throat are able, because of added virulency, to invade the host whose resistance has been lowered. A variety of unhealthy conditions may arise from stasis of the intestinal contents. It is the opinion of many authorities on the subject, that pathogenic micro-organisms in the intestinal canal which remain there as infectious organisms, gain their entrance chiefly by swallowing infectious material from the mouth, throat, nose and through infected food.

J. Basch[6] presumes that Aphthenkrankheit is probably due to a certain predisposition and bacteria; the latter play a secondary role as a harmless permanent flora of the mouth of the host. Under certain circumstances producing a predisposition, conditions become pathogenic and an eruption involves the mucous membrane of the mouth perhaps as a phenomenon of a certain allergy. E. Flusser[7] claims that stomatitis aphthosa is a genuine acute infectious disease, the cause of which is unknown.

REPORT OF CASE

F. K., a Jewish boy, fifteen years old, well nourished and normally developed. Had mumps a few years ago. The family history was negative. The patient was an inmate of an orphans' home (Vista Del Mar, Palms, California). The board, rooming, and hygienic conditions were highly satisfactory; he was one of the healthiest and cleanest among the hundred inmates. He took sick suddenly on April 27, 1927, complaining of headache, sore throat and sore gums, with a temperature 101.2 and pulse of 100.

Examination revealed: lungs, heart, and abdomen negative; tonsils and gums showed redness. Next morning, April 28, the throat and tonsils became highly inflamed and dotted with whitish-yellow plug-like deposits the size of a pin-head; single minute shallow ulcerations were scattered over the lining of the mouth. The tongue was slightly coated. The gums appeared inflamed and swollen and discharged a seropurulent fluid. The submaxillary and cervical lymphatic glands became enlarged (the size of a pigeon egg) and painful. Temperature rose to 102.2 degrees; pulse, 104. Urinalysis gave negative results. Bacterioscopic examinations of the deposits of the tonsils and the discharge from the gums revealed diplococci, staphylococci, and *numerous spirochetes.*

On April 29 a crop of small vesicles, less than a pin-head in size, yellowish-gray with a red circle around them, appeared on the hard and soft palate and on the lingual and buccal aspects of the gums; the gums became more puffed and very loose. A slightly fetid odor appeared. A moderate diarrhea occurred. Repeated microscopic examinations of the discharge from the gums and vesicles revealed diplo-